8. (Amended) A method for preparing an article having a platinum-aluminide surface region, comprising the steps of:

providing a substrate having a nickel-base superalloy substrate bulk composition and a substrate surface;

depositing a layer of platinum upon the substrate surface;

diffusing platinum from the layer of platinum into the substrate surface;

providing a source of aluminum; and

diffusing aluminum from the source of aluminum into the substrate surface for a time sufficient to produce a surface region at the substrate surface, the surface region having an integrated aluminum content of from about 18 to about 28 percent by weight and an integrated platinum content of from about 18 to about 45 percent by weight, balance components of the substrate bulk composition.

12. (Amended) The method of claim 8, wherein the step of providing a substrate includes the step of

providing a nickel-base superalloy substrate which is substantially a single crystal and has a composition that includes from about 5 to about 16 weight percent aluminum and from about 1 to about 8 weight percent rhenium.

13. (Amended) The method of claim 8, wherein the step of providing a substrate includes the step of

providing a nickel-base superalloy substrate which has a composition selected from the group consisting of (a) 7.5 percent cobalt, 7 percent chromium, 6.2 percent

aluminum, 6.5 percent tantalum, 5 percent tungsten, 1.5 percent molybdenum, 3 percent rhenium, balance nickel; (b) 12.5 percent cobalt, 4.5 percent chromium, 6 percent aluminum, 7.5 percent tantalum, 5.8 percent tungsten, 1.1 percent molybdenum, 5.4 percent rhenium, 0.15 percent hafnium, balance nickel; and (c) 12 percent cobalt, 6.8 percent chromium, 6.2 percent aluminum, 6.4 percent tantalum, 4.9 percent tungsten, 1.5 percent molybdenum, 2.8 percent rhenium, 1.5 percent hafnium, balance nickel.

16. (Amended) A method for preparing an article having a platinum-aluminide surface region, comprising the steps of:

providing a substrate having a nickel-base superalloy substrate bulk composition and a substrate surface;

depositing a layer of platinum;

heating the substrate and layer of platinum to a temperature of about 1800-2000°F for a time of about 2 hours;

providing a source of aluminum in contact with the substrate surface, the source of aluminum having an activity of about 40 to about 50 atomic percent as measured in a pure nickel foil; and simultaneously

heating the substrate surface and the source of aluminum to a temperature of about 1925-2050°F for a time of from about 4 to about 16 hours

18. (Amended) The method of claim 16, wherein the step of providing a substrate includes the step of

providing a nickel-base superalloy substrate which is substantially a single crystal and has a composition that includes from about 5 to about 16 weight percent aluminum and from about 1 to about 8 weight percent rhenium.

47. (Amended) A method of forming a thermal barrier coating on a substrate, comprising:

chemical vapor depositing a diffusion aluminide layer on the substrate which includes a nickel base superalloy substrate

under deposition conditions effective to provide an outer aluminide layer region comprising a solid solution intermediate phase and an inner diffusion zone region proximate the substrate;

said intermediate phase including an average aluminum concentration in the range of about 18 to about 28 % by weight, an average platinum concentration in the range of about 8 to about 45 % by weight, and an average nickel concentration of about 50 to about 60 % by weight

so as to be non-stoichiometric relative to intermetallic compounds of aluminum and nickel, or aluminum and platinum, said outer layer region being substantially free of phase constituents other than said intermediate phase;

oxidizing the aluminide layer under temperature and oxygen partial pressure conditions effective to form an alpha alumina layer; and

depositing a ceramic thermal barrier layer on the alumina layer;

wherein said intermediate phase comprises a surface, distant from said inner diffusion zone region, and the intermediate phase includes the aluminum

content and the platinum content which is relatively high adjacent to the surface and decreases with increasing depth into the intermediate phase.

73. (Amended) A method of forming a thermal barrier coating on a substrate, comprising:

chemical vapor depositing a diffusion aluminide layer on the substrate which includes a nickel base superalloy substrate;

said aluminide layer including an average aluminum concentration in the range of about 18 to about 28 % by weight and an average platinum concentration in the range of about 8 to about 45 % by weight, wherein said diffusion aluminide layer further comprises a surface, and includes the aluminum content and the platinum content which is relatively high adjacent to the surface and decreases with increasing depth into the aluminide layer and the substrate; and

depositing a ceramic thermal barrier layer on the aluminide layer.

A marked up version of the amended claims detailing insertions and deletions to the amended claims, pursuant to 37 C.F.R. § 1.121(c)(ii), is included as an Appendix separate from and attached to this Amendment.

Please add the following claim:

112. The method of claim 73 wherein the aluminide layer comprises an average platinum concentration of about 18 to about 45 % by weight.

REMARKS

I. The Claims Are Supported By The Specification As Originally Filed

The application as filed supports the above claim amendments.